Interaction of Lexical and Boundary-Marking Accents in Japanese*

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0. Introduction

The present-day Japanese dialects display rich manifestations of the possibilities of accent languages. Some entail free accent, others fixed accent, either type comparable to the case in many Indo-European languages, where the accent makes only the accented segment tonally prominent (cf. Halle and Kiparsky (1977, 1981)). Still others involve both free accent and fixed accent in various modes, with tonal prominence on the whole sequence of segments bounded on both ends by the two accents.

The historical background of this state of affairs is that Japanese had come to possess a "mixed" accent system of unrivalled complexity by the Heian Period and that the language subsequently underwent a series of dynamic phonological changes which led to simplification and generalization of its rather inelegant proto-system. (For details see Kohno (1981a).) Hence the various accent systems characterizing the present-day Japanese dialects can be taken as descendants (whether immediate or remote) of a single Old Japanese system. The current mixed-accent system may be the immediate offspring of the original system, whereas the present free-accent system and the present fixed-accent system represent two extremes which may have stemmed from the common underlying system after a distinct series of drastic simplifications.

Various forms of both theoretical and practical dissonance accompany the so-far proposed tonological frameworks which do not admit the compatibility of free accent and fixed accent. Particularly, Haraguchi's (1977, 1979) version of the autosegmental theory (henceforth AT), where the two accents (when stated in our terms) are regarded as mutually exclusive, critically fails to give coherent characterizations to otherwise the same tonological phenomena. In concrete terms, let us assume dialects A and B arbitrarily. In dialect A the penultimate syllable of each lexical item alone bears a prominent H (=High) pitch. In dialect B, on the other hand, not only the penult but also the preceding syllables terminated by the lexically specified onset of the contour are marked by H. The AT may view the prominence on the penult in dialect A as fixed accent, while it may offer no special status to the corresponding syllable in dialect B since, regardless of the obvious tonal similarity, the latter already contains free accent (or lexical accent). In the AT the penultimate H in the latter dialect may be seen simply as the direct reflex of (a part of) the basic tone

melody free of tone-modification (in contrast to the final syllable, which is subject to H-L (=High-Low) lowering). The AT thus falls far short of eliciting constant properties of accent, if the same tonal prominence is to be characterized consistently in the same way provided there are no special reasons for it not being so characterized.

The assumption of the mixed-accent system calls for a new framework for implementing accent tonally. Surely the AT does not qualify, since it is marred by a number of vitally important theoretical problems. Among these are such recalcitrant problems as on what principled basis a particular basic tone melody can be stipulated and what kinds of tone-modification rules are to be admitted in a grammar. (See Kohno (1981b) for a detailed discussion.) In view of the total dependence of tonal contours on accentual configurations in accent languages, tones should not be postulated independently of accent in these languages, contrary to the practice of the AT. A tonal contour here, unlike that in tone languages, seems to be best described as a sequence of H and L pitches mirroring the presence or absence of accent. This makes it possible to dispense with the unrestricted number of tone-modification rules which actualize the more or less abstract basic tone melodies in the AT framework.

The mechanism for implementing accent in tonological terms needs to be highly universal. Otherwise it fails to uncover the intimate underlying relationships among the free-accent, fixed-accent, and the mixed-accent systems. This tonological mechanism also needs to be valid for not only a class of accent languages without tonal contrasts in each syllable, but also a class of accent languages involving tonal contrasts as typified by Lithuanian, Serbo-Croatian, and Norwegian (cf. Kiparsky (1973), Ivić (1973), and Haugen (1967)). Unfortunately, no tonological theory proposed so far, to my knowledge, has been fully successful in achieving universal validity in significant depth.

1. The Accentual System of Japanese

1.1. Boundary-Marking Accent

The so-called "accentless dialects" in Japanese, whose tonal configurations are unique to respective phonological phrases (cf. Kohno (1980)) rather than to constituent lexical items, may be interpreted in a new light as those involving boundary-marking accent whose function it is to designate, whether directly or indirectly, either the onset or the terminus of a phonological phrase. Japanese displays the following sorts of boundary-marking accent.[1] (In what follows boundary-marking accent and a phonological phrase boundary are symbolized as ' and | respectively. Also, boldface in lexical representations indicates high pitch in contrast to low pitch.)

(1) *Boundary-Marking Accent:*

i) $|\, C_0 \acute{V} \cdots$

ii) $|\, C_0 V C_0 \acute{V} \cdots$

iii) $\cdots C_0 \acute{V} C_0 V\, |$

iv) $\cdots C_0 \acute{V}\, |$

These kinds of boundary-marking accents may appear either alone or combinatorily in individual dialects. For instance, subtypes i), ii), and iv) above function as unique boundary-marking accents in, respectively, Shimagawa (e. g. *átumeru* 'collect'), Izumi (e. g. *atúmeru*), and Miyakonozyo (e. g. *kagami-gá* 'mirror (Subj)'). A combinatory use of subtypes ii) and iii), yielding such forms as *atámá-ga* 'head (Subj)', can be observed in Sendai, whereas a parallel employment of subtypes iii) and iv), which enables us to distinguish the penultimate high class from the final high class (e.g. *sakúra* 'cherry tree' or *sakurá-ga* 'cherry tree (Subj)' vs. *kagamí* or *kagami-gá*) can be witnessed in Kagoshima.

By definition, the boundary-marking accent, unlike the lexical accent, is not the accent specific to a particular segment of a morpheme. Rather, it is invariant accent of a phonological phrase (of whatever internal structure) in each dialect. Therefore, '*sakura*' in Kagoshima, for example, realized as *sakúra* when it singly constitutes a phonological phrase, may surface as *sakurá-ga* instead of *sakúra-ga* when it accompanies a particle. (This apparent mobility of accent when viewed from the lexical side characterizes the boundary-marking accent.) The lexically unmarked nature of the boundary-marking accent holds good in the Kagoshima case also, where, as mentioned above, the two accentual classes are kept apart. However, each lexical item should be specified as to which of accents iii) and iv) it may potentially bear. Needless to say, lexical specification of these (or whatever) boundary-marking accents on any particular segments is unwarranted.

1. 2. Lexical Accent

The lexical accent is a property of a mora (or syllable) of a particular morpheme, the distinctive function of the lexical accent lying in its presence or absence and its locus. The single Japanese dialect manifesting a sheer lexical accent system is Shizukuishi, as illustrated below. (In what follows, only four-mora words are shown for ease of discussion, and lexical accent is symbolized as *, with a falling tone indicated by underlining.)

(2) a. tomodati 'friend'
b. $\overset{*}{\text{u}}$rukome 'common rice'
d. kuda$\overset{*}{\text{mo}}$no 'fruit'
e. kamina$\underline{\overset{*}{\text{ri}}}$ 'thunder'

c. te**bu**kuro* 'glove'

The above examples show that the mora bearing lexical accent is provided with tonal prominence as manifested by a H level tone or a HL contour tone (whose difference we leave unquestioned for the moment). (2a) fails to obtain such prominence due to the lack of lexical accent. In general, the lexical accent system allows as many surface tonal forms as the number of moras constituting a morpheme plus one.

1.3. Compatibility of Boundary-Marking Accent and Lexical Accent

Boundary-marking accents (1) i) -iv) may be freely combined with lexical accent in each dialect, yielding characteristic tonal shapes. The first type of combination of the two accents is embodied in the Tokyo dialect:

(3) a. e**ńpitú** 'pencil'
b. h**o**nbako* 'bookcase'
c. hi**k**ooki* 'airplane'
d. a**ózo**ra* 'blue sky'
e. o**tóoto**** 'younger brother'

As is clear from the preceding examples, this dialect contains a form without lexical accent, i.e. the unstarred item, as well as the forms involving lexical accent associated with distinct moras, in common with other lexical accent dialects. The lexical accent in Tokyo embodies itself by making the accented mora stand out from any following mora(s). (This function may be covert in (3e), where no following mora appears.) The lexically unaccented (3a) and the lexically accented (3e) may converge superficially, but a difference arises in an extended phonological phrase. Hence a surface tonal contrast between ***ńpitú*** vs. ***ńpitu-gá*** and ***otóoto**** vs. ***otóoto*-ga*** obtains. The accent on the last mora of ***otóoto**** is the lexical accent, which explains why it remains intact even if a phonological sequence has been elongated by the addition of the subject case marker *-ga*. In contrast, what the ultima of ***ńpitú*** bears is the boundary-marking accent which is specific to the phonological phrase of this dialect rather than to individual lexical item; therefore, it behaves as a movable accent. (3a) thus contains boundary-marking accent (liv). Another boundary-marking accent obtaining in the Tokyo system is the second-mora accent, *viz.* (lii). This accent is universally fulfilled except for initially (lexically) accented items (as long as it does not vitiate the lexical accent's function of designating lexically marked prominence (on a certain mora) as distinct from the following mora(s)). The accentual system of Tokyo may now be summarized as follows: (3a) involves boundary-marking accents (lii) and (liv), whereas (3b), prevented from realizing boundary-marking accent by the preceding lexical accent, embraces only lexical accent. (3c) contains

boundary-marking accent (lii) and lexical accent which happen to fall upon the tautomora, while (3d) and (3e) typify the cases where boundary-marking accent and lexical accent are overtly compatible.

A second type of the mixed-accent system in Japanese is to be found in Hirosaki. Some illustrative tonal forms are in order:

(4)	a.	tomodatí	'friend'	d.	kudamóno	'fruit'
	b.	úrukóme	'common rice'	e.	kaminári	'thunder'
	c.	tebúkúro	'glove'			

It may be obvious that the lexically unaccented (4a) with a final H mora is provided with boundary-marking accent on the relevant locus. The lexical accent here, located at the turning point from L to H, serves to indicate prominence over the preceding mora(s) in contradistinction to the lexical accent of the Tokyo type. Excepting (4a) and (4e), whose final moras bear either boundary-marking accent or lexical accent, all the examples in (4) additionally acquire penultimate boundary-marking accent, one conceivable means to designate the terminus of a phonological phrase embedding an accented word. It should be noted that this boundary-marking accent becomes inoperative if there is a danger of it competing with, or even superseding, subsequent accent, whether lexical as in (4e) or boundary-marking as in (4a). These observed precedence relationships among accents, i. e. lexical accent over boundary-marking accent, and final boundary-marking accent over any other boundary-marking accent, are universally true in Japanese.

A third type of the mixed-accent system manifests itself in Osaka. Observe the following surface tonal representations:

(5)	*Initial L Class*		*Initial H Class*	
a.	tukemonó	'pickles'	níwatorí	'chicken'
b.	_____		úguisu	'Japanese nightingale'
c.	bitámin	'vitamin'	béntoo	'lunch'
d.	nokogíri	'saw'	kámínari	'thunder'
e.	x x x x		_____	

(where x stands for an arbitrary mora)

Employment of the two tonal word classes helps to increase the number of possible tonal forms up to almost twice as many as those found in single word-class dialects. The accentual system of the initial L class may be familiar by now: the lexically unaccented (5a) is identical with the corresponding item (4a) in Hirosaki, while the accented (5b) – (5e) conform to the corresponding forms in Shizukuishi, excluding the systemic gap (5b). This may naturally lead us to assume that the initial L class

in Osaka constitutes a mono-accent system, with (5a) involving boundary-marking accent (liv) and the remainder bearing differently anchored lexical accent. The accentual system of the initial H class may prove to be intimately related to that of the initial L class in spite of the apparent great differences which may be felt between them. In terms of the mixed-accent system, this tonal word class may be identified simply as a class incorporating boundary-marking accent (li). Other accentual properties of this word class are shared by the initial L class as well. (The high level tone characteristic of the initial H class results from application of universal pitch distribution conventions, to be elaborated in full detail in section 2 below, to the effect that all the intermediate moras surrounded by two accents become H.) The boundary-marking accent on the initial mora may be ascribed to either an accent-assignment rule whose application depends on the properties of each lexical item, or direct specification of this accent for each lexical item. We will tentatively adopt the latter interpretation.

The Osaka system admits of a handful of variants. The Kochi dialect embodies one such variant. Compare the tonal configurations in (6) with those in (5):

(6)	*Initial L Class*		*Initial H Class*	
a.	daídai	'orange color'	**tómodatí**	'friend'
b.	_____		*uguisu	'Japanese nightingale'
c.	nadesiko	'wild pink'	**ásagao**	'morning glory'
d.	osíroi	'powder'	**kánzasi**	'ornamental hairpin'
e.	_____		**ákuruhi**	'next day'

As regards the initial H class, the tonal forms in (6) are in perfect conformity with those in (5), the systemic gaps in (6) being excluded from consideration. The initial L class in Kochi contrasts with that in Osaka in the second-mora boundary-marking accent which, in turn, characterizes Tokyo as well. Our interpretation of this state of affairs is straightforward: in Kochi each (minor) phonological phrase acquires either lexical accent (underlyingly) or final boundary-marking accent, i.e. (liv), (derivatively) ; furthermore, the initial H class bears initial boundary-marking accent (li), while the initial L class acquires second-mora boundary-marking accent. In passing, diachronic evidence indicates that the Kochi system is an immediate successor of the Muromachi Kyoto system, and that the Tokyo system evolved from the Muromachi Kyoto system by total abandonment of the initial H class. (See Kohno (1981a) for a relevant discussion.)

The Marugame dialect constitutes a second variant of the Osaka system, as is clear from the examples below:

(7)	*Initial L Class*		*Initial H Class*	
a.	niwatori	'chicken'	**hínomarú**	'the sun flag'

b.	_____		**tanabata**	'the Festival of Star Vega'
c.	nadesiko	'wild pink'	**ásikosi**	'limb'
d.	bengosi	'lawyer'	**tínomigo**	'infant'
e.	mayoigo	'stray boy'	**gárasudo**	'glazed door'

The tonal patterns of the initial H class above have already appeared in the Osaka dialect (disregarding the systemic gap of the final-starred items in Osaka) and the Kochi dialect, whereas those of the initial L class are basically identical to the Shizukuishi patterns, i.e. (2).[2] This leads us to contend that the accents operative in Marugame are lexical accent and boundary-marking accents (li) and (liv), with exclusive use of lexical accent yielding the initial L class in contrast to the combinatory use of lexical accent, and either boundary-marking accent (li) or (liv) bringing about the initial H class. The only difference between the Marugame system and the Osaka system lies in the scope of application of boundary-marking accent (liv): in the former this accent affects the initial H class only, while in the latter it affects both the initial H and initial L classes.

Another variant of the Osaka system is materialized in the Takamatsu dialect, which entails two kinds of initial L classes with the absence of any initial H class at all, contrary to the other Osaka type dialects. Observe the following:

(8)[3]	*Initial L Class I*		*Initial L Class II*	
a.	niwatori	'chicken'	**hinómarú**	'the sun flag'
b.	_____		**habutae**	'glossy silk'
c.	nadesiko	'wild pink'	_____	
d.	murasaki	'purple'	**Tadótusi**	'Tadotsu City'
e.	_____		_____	

The observable systemic gaps aside, we can safely conclude that the initial L class I corresponds to its counterpart in Marugame, and that the initial L class II is identical to the initial L class in Kochi. Consequently, the accentual characterization of Takamatsu in our terms may proceed as follows: the initial L class I is a system of lexical accent alone, whereas the initial L class II is a mixed-accent system involving boundary-marking accents (liii) and (liv) in addition to lexical accent.

The general properties of the Osaka type dialects examined so far may be summarized in this way: first, the dialects unanimously employ lexical accent; second, they each utilize a certain number of boundary-marking accents at least one of which is applicable to a certain word class so that two kinds of tonal implementations obtain in each dialect; third, on the whole, they constitute a group of the most sophisticated mixed-accent systems in Japanese which, as a historical reflex, play a

key role in orientating both a rigid lexical accent system (as in Shizukuishi) and a genuine boundary-marking accent system (as in Kagoshima, among others).

2. Tonal Realizations of Accent

In accent languages it is first and foremost accent that determines tonal realizations. This fact distinguishes accent languages from tone languages, which allow free associations of tones with tone-bearing segments. One significant universal feature of accent in Japanese is that, as has been confirmed in many other languages, any accent, whether lexical or boundary-marking, is implemented by high pitch (H). Hence, the processes of accent realizations discussed in the foregoing sections, now referred to as the Pitch Assignment Rules, may be formulated as follows:

(9) *Pitch Assignment Rules:*

I. $\overset{*}{V} \longrightarrow H$

II. $V \longrightarrow H \;/\; X\ C_0\ \_\_\_\ |$ (Condition: $X \neq \cdots \overset{*}{V} \cdots$)

III. $V \longrightarrow H \;/\; X\ C_0\ \_\_\_\ C_0 \underset{(-H)}{V}\ |$

IV. $V \longrightarrow H \;/\; |\ C_0 \underset{(-H)}{V} C_0\ \_\_\_\ X$

Rule I above assigns H to lexical accent, while Rules II through IV materialize the boundary-marking accents on, respectively, the final mora, the penultimate mora, and the second mora. (Recall here that the initial-mora boundary-marking accent is specified directly in each initial H class item for the reason stated in 1.3. above.) Rule II is applicable exclusively to a phonological phrase devoid of lexical accent. Rule III, whose application is ordered after Rules I and II, is prevented from affecting the final H phonological phrase arising from the application of Rule I or Rule II. Rule IV, ordered after Rule I, affects all the items except the initial H items attributable to either Rule I (which transforms, in this particular case, th^S initially starred into the H) or direct specification in the lexicon to the effect that they belong to the initial H class.

The accent of Japanese interpreted in this way (presumably conforming to the universals of accent) occupies the turning point of a rising or falling pitch contour, thus succeeding in achieving prominence on the accent-bearing mora over the preceding or following moras (if available).

The next question to consider is how the non-accent-bearing moras are implemented tonally. The following two facts are relevant:

(10) i) All the moras between any two accents are H.
ii) All remaining moras are L (=-H).

These statements may be formulated in a somewhat generalized form as (11), to be referred to as the Pitch Distribution Conventions[4]:

(11) *Pitch Distribution Conventions:*

i) $(C_0\ V_a)^* \longrightarrow (C_0\ \underset{\alpha H}{V})^* \ /\ C_0\ \underset{\alpha H}{V}\ \_\_\ C_0\ \underset{H}{V}$

ii) $V_a \longrightarrow -H$ (elsewhere)

Condition: V_a is neither specifically H nor -H

This set of conventions comes into play after the Pitch Assignment Rules in (9) because of its sensitivity to the already obtained Hs. These conventions are responsible for shaping the sequences of H moras characteristic of the mixed-accent systems in Japanese.

Let us lastly turn our discussion to falling contour tone formation. This process, formulated as in (12), is no doubt a refinement of the last H associated with a lexically accented vowel.

(12) *Contour Tone Formation:*

$$\overset{*}{\underset{H}{V}} \longrightarrow \overset{*}{\underset{H\ -H}{\overset{\frown}{V}}}\ /\ X\ C_0\ \_\_\ |$$

One of the original functions of this falling contour tone seems to have lain in distinguishing lexical accent and boundary-marking accent occurring contingently on the final mora. This function is preserved in Hirosaki as well as the majority of the Osaka type dialects, yet it has already been obliterated in Tokyo (or the main subdialect of Tokyo, to be more exact), where the two accents in question surface identically as H. Moreover, the role of the contour tone has been fossilized in Shizukuishi in the sense that this tone has become no more than a redundant feature of the final lexical accent as a result of total abandonment of boundary-marking accent. Overall, the Contour Tone Formation at best enjoys the status of a low-level tone formation rule.

3. Conclusion

We have observed that the multifarious accentual systems of Japanese are classified into the following three types: (1) those involving lexical accent only, (2) those involving boundary-marking accent(s) only, and (3) those involving both lexical accent and boundary-marking accent. The presence of the third type strongly counters the common, yet not fully attested premise that lexical accent and boundary-

marking accent are mutually exclusive. The diversity of the Japanese accentual systems is ultimately attributable to distinct *choices* from a set of accents limited to the lexical accent and the four kinds of boundary-marking accent, rather than to various distinct accents. The segments bearing whatever accent are marked H (or HL via the Contour Tone Formation) by the Pitch Assignment Rules, while the segments free of any accent may either assimilate to the surrounding H moras or surface as L obeying the Pitch Distribution Conventions. The Japanese accentual systems suggest that tones in accent languages are completely subordinate to accent configurations. As long as this is true, there seems to be no ground for stipulating the autosegmental tones as advocated in the AT which in fact would be best reserved for genuine tone languages with distinct syllable-specific or morpheme-specific tones.

Notes

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1. Hyman (1977) demonstates that precisely the same demarcative accents are fully attested in numerous stress-accent languages.

2. As is pointed out by Wada (1958, 1959), the initial L (lexically) unaccented item tolerates the following phonetic variants along with (7a):

(7) a′. niwatori
a″. niwatori

Our explanation is that (7a′) is governed by boundary-marking accent (liv), while (7a″) is under the influence of boundary-marking accents (lii) and (liv). (It is still to be seen, however, whether or not the application of (iii) is extended to the entire initial L items.)

3. We do not deal with a group of items bearing a falling tone arising from the shift of lexical accent one mora to the right, e.g. *tatibana*, 'mandarine orange,' *mayoigo* 'stray boy,' *amazake* 'sweet sake,' or *garasudo* 'glazed door,' since these examples are irrelevant to the current discussion.

4. (lli), with far broader application than (10i), may in part help to furnish appropriate intonation contours of English. (See Kohno (1981c).)

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